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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,167	07/15/2003	Fumikazu Shimoshikiryoh	49185 CON (70840)	4293

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EXAMINER	
RUDE, TIMOTHY L	
ART UNIT	**PAPER NUMBER**
2883	

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/621,167	SHIMOSHIKIRYOH, FUMIKAZU	
	Examiner	Art Unit	
	Timothy L. Rude	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-16* is/are pending in the application.

4a) Of the above claim(s) *5-8,12,14 and 15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4,9-11,13 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims

Claims 4, 9, and 16 are amended.

Claim Objections

Objection to claim 9 withdrawn.

Claim 16 is objected to because of the following informalities: Base claim 4 does not have more than one second domain; dependent claim 16 either lacks antecedent basis or it fails to further limit base claim 4 with respect to more than one second domain. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 10, 11, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tillin et al (Tillin) USPAT 6,204,904 B1 in view of Matsumoto et al,

(Matsumoto) Electronic Display Devices, copyright 1990, John Wiley & Sons Ltd., and Woo et al (Woo) USPAT 6,191,836 B1.

As to claim 4, Tillin discloses a normally black mode homogeneous aligned liquid crystal display device [entire patent, especially col. 5, lines 1-9 and col. 12, line 66 through col. 13, line 29; meets Applicant's new recitations as to liquid crystal orientation in voltage on and voltage off states], comprising:

a first substrate and a second substrate at least one of which is transparent;

a liquid crystal layer interposed between the first and second substrates, the layer being made of a nematic liquid crystal material having a positive dielectric anisotropy;

a first electrode and a second electrode provided on the first and second substrates, respectively, for applying an electric field substantially vertical to the first and second substrates across the liquid crystal layer;

a phase difference compensator, 5, provided between the first polarizing plate and the first substrate, wherein the phase-delay axes of the first and second phase difference compensators are parallel to each other and perpendicular to a phase-delay axis of the liquid crystal layer, wherein:

the first and second phase difference compensators compensates for the refractive index anisotropy of the liquid crystal molecules in a substantially horizontal orientation with respect to the surfaces of the first and second substrates in the absence

of the applied voltage [col. 4, lines 17-52], the second phase difference compensator provided between the second polarizing plate and the second substrate.

Tillin does not explicitly disclose a display wherein: 1) a first polarizing plate provided on an outer side of respective one of the first and second substrates, the first and second polarizing plates being arranged in a crossed Nicols arrangement; and 2) the liquid crystal layer in each pixel region includes at least a first domain and a second domain in which liquid crystal molecules are oriented in different orientations.

Matsumoto teaches 1) a first polarizing plate provided on an outer side of respective one of the first and second substrates, the first and second polarizing plates being arranged in a crossed Nicols arrangement [bottom of page 43 through middle of page 45] to provide light blocking in one of the switched states (provides contrast) in a non-reflective display.

Matsumoto is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to add first and second polarizers to provide light blocking in one of the switched states (provides contrast) in the non-reflective display of Tillin.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Tillin with the first and second polarizers of Matsumoto to provide light blocking in one of the switched states to provide contrast.

Woo teaches 2) the use of a liquid crystal layer in each pixel region that includes at least a first domain and a second domain [adaptable to homogeneous mode, col. 5,

lines 13-23] in which liquid crystal molecules are oriented in different orientations to provide improved wider viewing angle [col. 2, lines 25-28].

Woo is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a homogeneous mode liquid crystal layer in each pixel region that includes at least a first domain and a second domain in which liquid crystal molecules are oriented in different orientations to provide improved wider viewing angle.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Tillin with the homogeneous mode liquid crystal layer in each pixel region that includes at least a first domain and a second domain in which liquid crystal molecules are oriented in different orientations of Woo to provide improved wider viewing angle.

Tillin

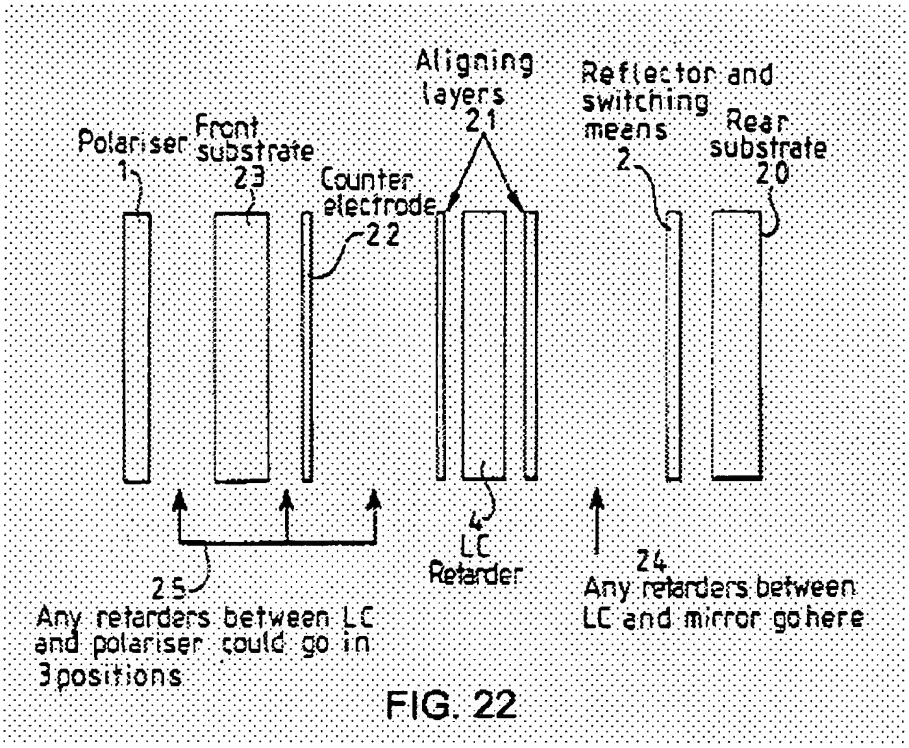
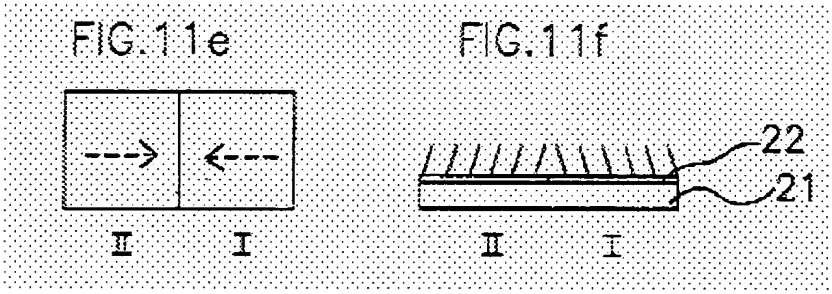


FIG. 22

Woo



As to claim 10, Tillin in view of Matsumoto and Woo, as combined above, disclose a liquid crystal display device according to claim 4, wherein: directors of the liquid crystal molecules in the first and second domains in the middle of the liquid crystal

layer along a thickness direction thereof rise in respective directions which are different from each other by about 180°; and

the directions are at about 45° with respect to the polarization axis of each of the first and second polarizing plates.

As to claim 11, Tillin in view of Matsumoto and Woo, as combined above, disclose a liquid crystal display device according to claim 4, wherein the liquid crystal molecules in the first and second domains are in a horizontal orientation [U in Figure 3 of Tillin and Figures 6 and 12d of Woo].

As to claim 13, Tillin in view of Matsumoto and Woo, as combined above, disclose liquid crystal display device according to claim 11, wherein pre-tilt angles of the liquid crystal molecules on the first and second substrates in the first domain are different from those in the second domain.

As to claim 16, Tillin in view of Matsumoto and Woo, as combined above, disclose liquid crystal display device according to claim 4, wherein a total area of the first domain is equal to that of the second domain.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tillin in view of Matsumoto and Woo, as applied to claims above, in view of Sharp USPAT 5,751,384.

As to claim 9, Tillin in view of Matsumoto and Woo, as combined above, disclose liquid crystal display device according to claim 4 [Applicant's 8].

Tillin in view of Matsumoto and Woo do not explicitly disclose a display wherein: a fifth phase difference compensator is provided between the first phase difference compensator and the third phase difference compensator; a sixth phase difference compensator is provided between the second phase difference compensator and the fourth phase difference compensator; the fifth and sixth phase difference compensators each have a positive refractive index anisotropy; a phase-delay axis of the fifth phase difference compensator is substantially perpendicular to a polarization axis of the first polarizing plate; and a phase-delay axis of the sixth phase difference compensator is substantially perpendicular to a polarization axis of the second polarizing plate.

Sharp teaches the use of a fifth phase difference compensator is provided between the first phase difference compensator and the third phase difference compensator; a sixth phase difference compensator is provided between the second phase difference compensator and the fourth phase difference compensator; the fifth and sixth phase difference compensators each have a positive refractive index anisotropy; a phase-delay axis of the fifth phase difference compensator is substantially perpendicular to a polarization axis of the first polarizing plate; and a phase-delay axis of the sixth phase difference compensator is substantially perpendicular to a polarization axis of the second polarizing plate [Abstract] for better color performance

[col. 36, lines 36-40]. Sharp is considered robust teaching for those having ordinary skill in the art of liquid crystals, at the time the claimed invention was made, in the use of up to six phase difference compensators for better phase compensation with motivation to combine.

Sharp is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add the use of a fifth phase difference compensator is provided between the first phase difference compensator and the third phase difference compensator; a sixth phase difference compensator is provided between the second phase difference compensator and the fourth phase difference compensator; the fifth and sixth phase difference compensators each have a positive refractive index anisotropy; a phase-delay axis of the fifth phase difference compensator is substantially perpendicular to a polarization axis of the first polarizing plate; and a phase-delay axis of the sixth phase difference compensator is substantially perpendicular to a polarization axis of the second polarizing plate for better color performance.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of a Tillin in view of Matsumoto and Woo with the fifth phase difference compensator is provided between the first phase difference compensator and the third phase difference compensator; a sixth phase difference compensator is provided between the second phase difference compensator and the fourth phase difference compensator; the fifth and sixth phase difference compensators each have a positive refractive index anisotropy; a phase-delay axis of the fifth phase difference compensator is substantially perpendicular to a

polarization axis of the first polarizing plate; and a phase-delay axis of the sixth phase difference compensator is substantially perpendicular to a polarization axis of the second polarizing plate of Sharp for better color performance.

Response to Arguments

Applicant's arguments filed on 28 February 2005 have been fully considered but they are not persuasive.

Applicant's ONLY substantive arguments are as follows:

(1) Regarding Takiguchi.

(2) Combining Woo would not result in the advantages of the present invention.

(3) Dependent claims are allowable because they directly or indirectly depend from an allowable base claim.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) Tillin in view of Matsumoto is applied to meet the new limitations not met by Takiguchi.

(2) Combining Woo and Matsumoto to Tillin, as motivated by each, is considered to result in the claimed invention.

(3) It is respectfully pointed out that in so far as Applicant has not argued rejection(s) of the limitations of dependent claim(s), Applicant has acquiesced said rejection(s).

Any references cited but not applied are relevant to the instant Application.

Conclusion

Applicant's amendment necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

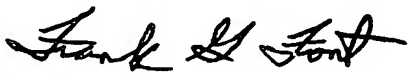
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L. Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tlr

Timothy L Rude
Examiner
Art Unit 2883



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